

CLAIMS

1. ECR plasma chamber (1) comprising an enclosure immersed in a magnetic configuration resulting from the superposition of two magnetic fields, one axial and the other radial, wherein the configuration of the electron trajectories depends on said magnetic configuration, characterized in that it comprises at least one moderator (100) whose position and shape are chosen as a function of said magnetic configuration so that said moderator (100) constitutes an obstacle to electrons whose energy is greater than a predetermined energy.
2. ECR plasma chamber according to claim 1, characterized in that the position and number of said moderators (100) are chosen as a function of the energy and the number of electrons to which an obstacle is required.
3. ECR plasma chamber according to claim 1 or claim 2, characterized in that the materials constituting the moderators (100) are chosen as a function of their aptitude to produce secondary electrons when they are subjected to collisions with high-energy electrons.
4. ECR plasma chamber according to any one of the preceding claims, characterized in that the radial magnetic field has $2n$ poles and the moderator (100) has n active portions (7) each of which is placed in a respective one of the n branches formed by the electron trajectories.
5. ECR plasma chamber according to any one of the preceding claims, characterized in that said moderator (100) comprises at least one active portion (7) and a ring (6) encircling the plasma.
6. ECR plasma chamber according to claim 5, characterized in that said active portion (7) takes the form of a cylindrical rod placed radially in a transverse

plane of the plasma chamber (1) with one end of the rod pointing toward the central region (3) of the plasma chamber (1) and the other end of the rod fixed to said ring (6).

5 7. ECR plasma chamber according to claim 5, characterized in that said active portion (7) is mounted at the end of a support rod which is itself fixed to said ring (6).

10 8. ECR plasma chamber according to any one of claims 1 to 7, characterized in that at least one moderator (100) has metal parts.

 9. ECR plasma chamber according to any one of claims 1 to 7, characterized in that at least one moderator (100) has ceramic parts.

15 10. ECR ion source comprising an ECR plasma chamber according to any one of claims 1 to 9.

 11. ECR plasma machine comprising an ECR plasma chamber according to any one of claims 1 to 9.